

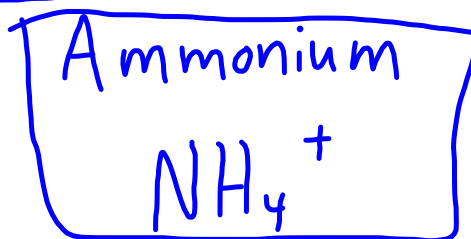
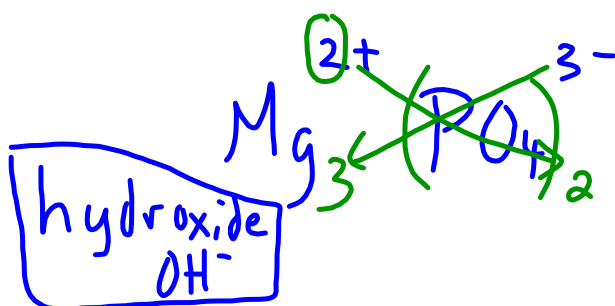
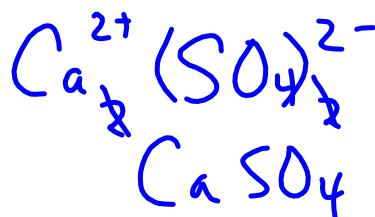
Green Sheet

POLYATOMIC IONS – THEORETICAL SUMMARY							
1⁻ Ions		1⁻ Ions		2⁻ Ions		3⁻ Ions	
• acetate	CH ₃ COO ⁻	hydrogen sulfide	HS ⁻	• carbonate	CO ₃ ²⁻	borate	BO ₃ ³⁻
benzoate	C ₆ H ₅ COO ⁻	(bisulfide)		chromate	CrO ₄ ²⁻	citrate	C ₆ H ₄ OH(COO) ₃
chlorate*	ClO ₃ ⁻	hydrogen sulfite	HSO ₃ ⁻	• dichromate	Cr ₂ O ₇ ²⁻	• phosphate	PO ₄ ³⁻
chlorite	ClO ₂ ⁻	(bisulfite)		hydrogen phosphate	HPO ₄ ²⁻		
cyanide	CN ⁻	• hydroxide	OH ⁻	oxalate	OOC ⁻ COO ²⁻	5⁻ Ion	
dihydrogen phosphate	H ₂ PO ₄ ⁻	• hypochlorite	ClO ⁻ , OCl ⁻	silicate	SiO ₃ ²⁻	tripolyphosphate	P ₃ O ₁₀ ⁵⁻
glutamate	C ₅ H ₉ NO ₄ ⁻	• nitrate	NO ₃ ⁻	• sulfate	SO ₄ ²⁻	1⁺ Ions	
• hydrogen carbonate	HCO ₃ ⁻	nitrite	NO ₂ ⁻	sulfite	SO ₃ ²⁻	• ammonium	NH ₄ ⁺
(bicarbonate)		perchlorate*	ClO ₄ ⁻	tetraborate	B ₄ O ₇ ²⁻	hydronium	H ₃ O ⁺
hydrogen oxalate	HOOC ⁻ COO ⁻	• permanganate	MnO ₄ ⁻	thiosulfate	S ₂ O ₃ ²⁻	2⁺ Ion	
• hydrogen sulfate	HSO ₄ ⁻	stearate	C ₁₇ H ₃₅ COO ⁻			mercury(I)	Hg ₂ ²⁺
(bisulfate)		thiocyanate	SCN ⁻				
*There are also corresponding ions containing Br and I instead of Cl.				• Frequently used ions			
SOLUBILITY OF IONIC COMPOUNDS AT SATP – GENERALIZATIONS							
Anion	Cl⁻, Br⁻, I⁻	S²⁻	OH⁻	SO₄²⁻	CO₃²⁻, PO₄³⁻, SO₃²⁻	CH₃COO⁻	NO₃⁻
High Solubility (aq) ≥ 0.1 mol/L (at SATP)	most	Group 1, NH ₄ ⁺ Group 2	Group 1, NH ₄ ⁺ Sr ²⁺ , Ba ²⁺ , Tl ⁺	most	Group 1, NH ₄ ⁺	most	all
Low Solubility (s) < 0.1 mol/L (at SATP)	Ag ⁺ , Pb ²⁺ , Tl ⁺ , Hg ₂ ²⁺ (Hg ⁺), Cu ⁺	most	most	Ag ⁺ , Pb ²⁺ , Ca ²⁺ , Ba ²⁺ , Sr ²⁺ , Ra ²⁺	most	Ag ⁺	none
All Group 1 compounds, including acids, and all ammonium compounds, are assumed to have high solubility in water.							
ACID-BASE INDICATORS							

Blue Sheet Fill in the missing info from the green sheet

	Acids		Bases	Salts	
Binary	Hydrogen + Nonmetal			Metal cation + Nonmetal	
No Oxygen	<input type="text"/>	<input type="text"/>		<input type="text"/>	<input type="text"/>
Regular Polyatomic "OXY" →	Hydrogen + Nonmetal Polyatomic Ion (usually containing Oxygen)		Metal + Hydroxide OH^-	Metal + Negative Polyatomic Ion (usually containing Oxygen)	
	<input type="text"/>	Phosphoric Acid		<input type="text"/>	Phosphate
	<input type="text"/>	Sulfuric Acid		<input type="text"/>	Sulfate
	<input type="text"/>	Carbonic Acid		<input type="text"/>	Carbonate
	<input type="text"/>	Chromic Acid	Ammonia	<input type="text"/>	Chromate
	<input type="text"/>	Nitric Acid	<input type="text"/>	<input type="text"/>	Nitrate
	<input type="text"/>	Chloric Acid		<input type="text"/>	Chlorate
	<input type="text"/>	Acetic Acid (aka ethanoic Acid)	Ammonium	<input type="text"/>	Acetate (or ethanoate)
Irregular Polyatomic	<input type="text"/>	<input type="text"/>	ONE extra oxygen	<input type="text"/>	<input type="text"/>
"O" not normal	<input type="text"/>	<input type="text"/>	ONE LESS oxygen	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	TWO LESS oxygen	<input type="text"/>	<input type="text"/>
Properties					

Salts	
Metal <u>cation</u> + <u>Nonmetal</u>	
<u>full name</u>	<u>ide</u> ending
Metal + Negative Polyatomic Ion (usually containing Oxygen)	
PO_4^{3-}	Phosphate
SO_4^{2-}	<u>Sulfate</u>
CO_3^{2-}	Carbonate
CrO_4^{2-}	Chromate
NO_3^{-}	Nitrate
ClO_3^{-}	Chlorate
$\text{CH}_3\text{COO}^{-}$	Acetate(or <u>ethanoate</u>)



Hwk Pink sheet

Do worksheet 3

NAMING BINARY COMPOUNDS (NIC) Name 3

Name the following ionic compounds using Roman numerals where necessary.

1. BaCl_2	11. K_2S
2. NaF	12. CrCl_2
3. Ag_2O	13. CrCl_3
4. CuBr	14. CaO
5. CuBr_2	15. Ba_3P_2
6. FeO	16. Hg_2I_2
7. Fe_2O_3	17. Na_2O
8. MgS	18. BeS
9. Al_2O_3	19. MnO
10. CaI_2	20. Mn_2O_3

Sheet 3

Name the following ionic compounds using roman numerals where necessary

- | | |
|----------------------------|-----------------------------|
| 1. BaCl_2 | 11. K_2S |
| 2. NaF | 12. CrCl_2 |
| 3. AgO | 13. CrCl_3 |
| 4. CuBr | 14. CaO |
| 5. CuBr_2 | 15. Ba_3P_2 |
| 6. FeO | 16. Hg_2I_2 |
| 7. Fe_2O_3 | 17. Na_2O |
| 8. MgS | 18. BeS |
| 9. Al_2O_3 | 19. MnO |
| 10. CaI_2 | 20. Mn_2O_3 |